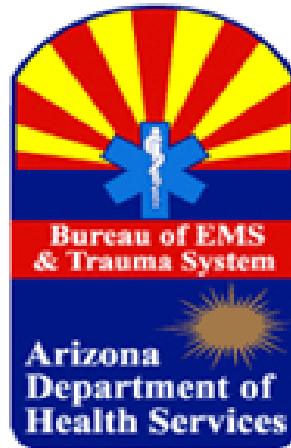


ARIZONA DEPARTMENT OF HEALTH SERVICES
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM



JUNE 2013
GRAHAM COUNTY REPORT
ASTR 2011

Prepared by:
Maureen Brophy, MPH
Vatsal Chikani, MPH
Rogelio Martinez, MPH

Data and Quality Assurance

Purpose:

The purpose of this report is to describe the incidence of trauma in Graham County using the Arizona State Trauma Registry (ASTR). This information can be used to assist in the development and strengthening of injury prevention programs at the county level.

Methods:

In 2011, the Arizona State Trauma Registry (ASTR) received data from 23 state-designated trauma centers. Four additional healthcare institutions participated in the registry but were not designated. The Arizona EMS and Trauma System has eight Level I trauma centers - six located in the central county of Maricopa with 60 percent of the state's population; the remaining two Level I trauma centers are respectively located in the northern-most county of Coconino and the southern county of Pima. For the 2011 reporting year, there were 15 designated Level IV trauma centers dispersed primarily in the rural areas of the state. There are a total of 29,877 records in the ASTR for 2011.

Limitations:

Data is limited to participating agencies in the state. Information on patients that are transported out of Arizona will be missed as well as those seen at hospitals that are not participating. Injuries included in this registry are those which fit the [ASTR inclusion criteria](#). As such, injuries reported are more severe injuries, and therefore not a complete picture of injury in Graham County.

Geo-Population:

Arizona is 400 miles long and 310 miles wide for a total area of 114,006 square miles. The topography of the state is 364 square miles of water and a blend of deserts, mountains, and plateaus. Arizona shares contiguous borders with the states of California, Colorado, Nevada, New Mexico, and Utah. Internationally, the Mexican states of Sonora, Chihuahua, and Baja California Norte share a border with Arizona.

The total reported population in 2011 was 6,438,178; this was up from the 2010 reported number of 6,392,017 residents ¹. In 2011, 84.1 percent of the population lived in urban counties (Maricopa, Pima, Pinal, and Yuma). The remaining counties (Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz, and Yavapai) were home to 15.9 percent of the population.

Additionally, Arizona has within its borders twenty-two (22) federally recognized American Indian tribes, comprising a 2011 collective population of 296,529, of which 162,119 (55 percent) reside on reservations and tribal lands.

¹ <http://www.azdhs.gov/plan/menu/info/pop/pop11/pd11.htm>

Arizona State Designated Trauma Centers

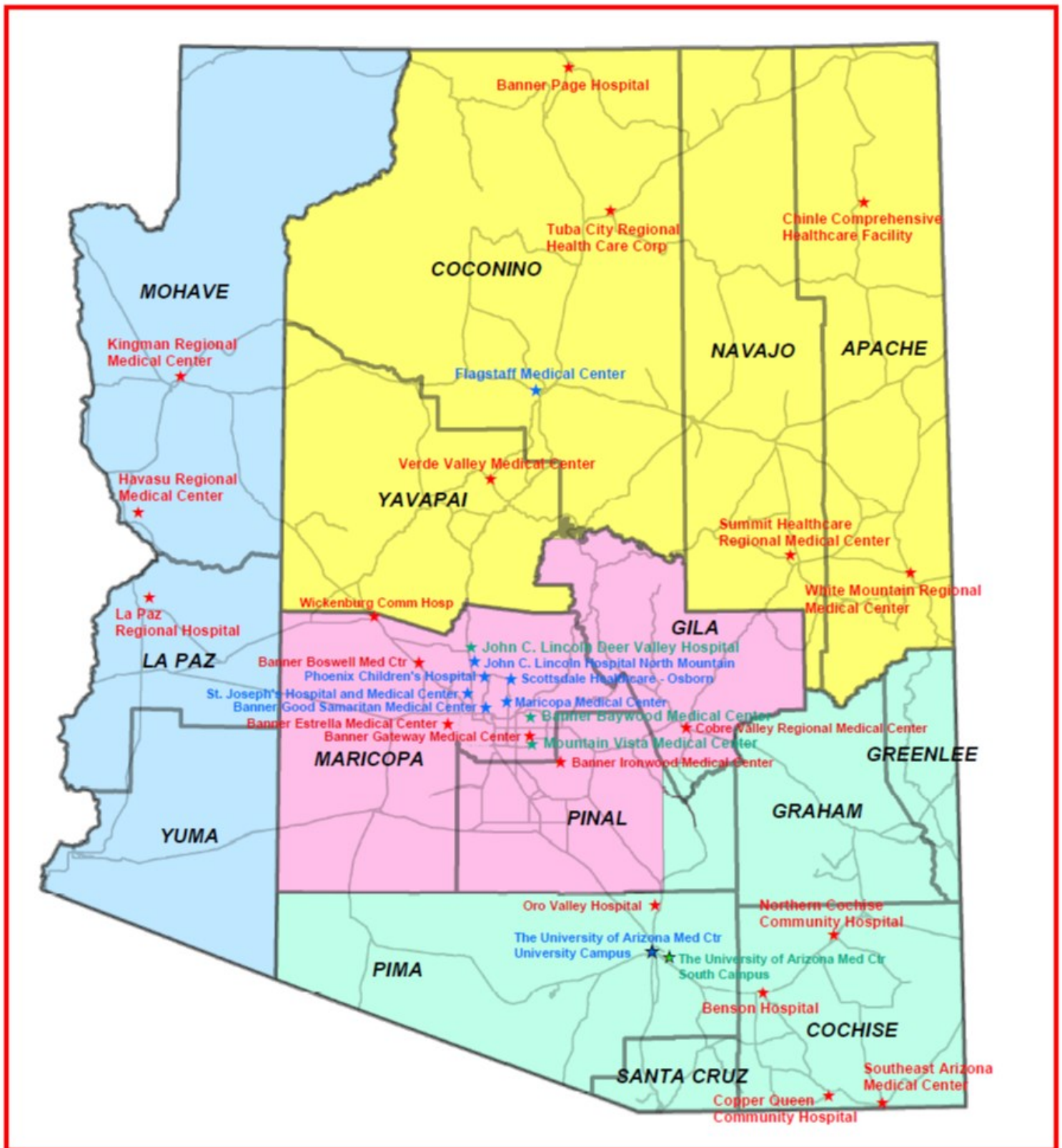
Health Care Institution	Address	Effective Date	Expiration Date
Level I Trauma Centers			
Banner Good Samaritan Medical Center	925 E. McDowell Rd., Phoenix, AZ 85006	11/19/11	11/19/14
Flagstaff Medical Center	1200 N. Beaver St., Flagstaff, AZ 86001	05/27/11	05/27/14
John C. Lincoln - North Mountain	250 E. Dunlap Ave., Phoenix, AZ 85020	04/23/11	04/23/14
Maricopa Medical Center	2601 E. Roosevelt, Phoenix, AZ 85008	12/20/11	12/20/14
Phoenix Children's Hospital	1919 E. Thomas Rd., Phoenix, AZ 85016	08/31/12	08/31/15
St. Joseph's Hospital & Medical Center	350 W. Thomas Rd., Phoenix, AZ 85013	11/20/10	11/20/13
Scottsdale Healthcare – Osborn	7400 E. Osborn, Scottsdale, AZ 85251	10/25/11	10/25/14
The University of Arizona Medical Center – University Campus	1501 N. Campbell Ave., Tucson, AZ 85724	11/12/11	11/12/14
Level III Trauma Centers			
Banner Baywood Medical Center (Provisional Designation)	6644 E. Baywood Ave., Mesa, AZ 85206	07/30/12	01/30/14
John C. Lincoln Deer Valley Hospital (Provisional Designation)	19829 N. 27 th Ave., Phoenix, AZ 85027	02/04/13	10/04/14
Mountain Vista Medical Center (Provisional Designation)	1301 S. Crismon Rd., Mesa, AZ 85209	02/24/12	08/24/13
The University of Arizona Medical Center South Campus (Provisional Designation)	2800 E. Ajo Way, Tucson, AZ 85713	02/13/12	08/13/13
Level IV Trauma Centers			
Banner Boswell Medical Center	10401 W. Thunderbird Blvd., Sun City, AZ 85351	12/17/12	12/17/15
Banner Estrella Medical Center	9201 W. Thomas Road, Phoenix, AZ 85037	08/30/12	08/30/15
Banner Gateway Medical Center	1900 N. Higley Road, Gilbert, AZ 85234	01/02/13	01/02/16
Banner Ironwood Medical Center	37000 N. Gantzel Rd., San Tan Valley, AZ 85140	10/11/12	10/11/15
Banner Page Hospital	501 N. Navajo, Page, AZ 86040	11/05/11	11/05/14
Benson Hospital	450 S. Ocotillo Ave., Benson, AZ 85602	03/03/11	03/03/14
Chinle Comprehensive Health Care Facility	P.O. Drawer PH, Chinle, AZ 86503	09/09/10	09/09/13
Cobre Valley Regional Medical Center	5880 S. Hospital Dr., Globe, AZ 85501	11/26/12	11/26/15
Copper Queen Community Hospital	101 Cole Ave., Bisbee, AZ 85603	12/01/12	12/01/15
Havasü Regional Medical Center	101 Civic Center Ln., Lake Havasu City, AZ 86403	01/20/11	01/20/14
Kingman Regional Medical Center	3269 Stockton Hill Rd., Kingman, AZ 86409	10/15/12	10/15/15
La Paz Regional Hospital	1200 W. Mohave Rd., Parker, AZ 85344	06/02/12	06/02/15

Health Care Institution	Address	Effective Date	Expiration Date
Northern Cochise Community Hospital	901 W. Rex Allen Dr., Willcox, AZ 85643	12/04/11	12/04/14
Oro Valley Hospital	1551 East Tangerine Road, Oro Valley, AZ 85755	4/18/13	4/18/16
Southeast Arizona Medical Center	2174 W. Oak Ave., Douglas, AZ 85607	08/18/11	08/18/14
Summit Healthcare Regional Medical Center	2200 Show Low Lake Rd., Show Low, AZ 85901	08/12/11	08/12/14
Tuba City Regional Health Care Corp.	P.O. Box 600, Tuba City, AZ 86045	05/06/12	05/06/15
Verde Valley Medical Center	269 S. Candy Ln., Cottonwood, AZ 86326	08/18/11	08/18/14
White Mountain Regional Medical Center	118 S. Mountain Ave., Springerville, AZ 85938	06/18/12	06/18/15
Wickenburg Community Hospital	520 Rose Ln., Wickenburg, AZ 85390	08/08/11	08/08/14

Updated as of May 1, 2013

EMS REGIONS AND TRAUMA CENTERS

May 1, 2013



Level I Trauma Center

Level III Trauma Center (Provisional)

Level IV Trauma Center

FIGURE 1: Graham County population by age, gender, and race/ethnicity, AZ Health & Vital Statistics

Group		Population	Percent
Age	<1	627	1.7%
	1-4	2,629	7.0%
	5-9	2,921	7.7%
	10-14	2,864	7.6%
	15-19	3,191	8.5%
	20-24	2,991	7.9%
	25-29	2,763	7.3%
	30-34	2,604	6.9%
	35-39	2,320	6.2%
	40-44	2,253	6.0%
	45-49	2,246	6.0%
	50-54	2,275	6.0%
	55-59	2,013	5.3%
	60-64	1,710	4.5%
	65-69	1,291	3.4%
	70-74	1,117	3.0%
	75-79	861	2.3%
	80-84	584	1.5%
	85+	450	1.2%
Gender	Male	20250	53.7%
	Female	17460	46.3%
Race/Ethnicity	White non-Hispanic	19,981	53.0%
	Hispanic or Latino	10,953	29.0%
	Black or African American	738	2.0%
	American Indian or Alaska Native	5,777	15.3%
	Asian or Pacific Islander	261	0.7%
Total		37,710	100%

FIGURE 2: Trauma frequency and rate per 100,000 by county

County of Injury	Total Population	Percent of Population	Trauma Count	Percent of All Traumas	Trauma Rate per 100,000
Apache	71,991	1.1%	507	1.7%	704
Cochise	130,537	2.0%	1,009	3.4%	773
Coconino	134,162	2.1%	1,383	4.7%	1,031
Gila	53,577	0.8%	506	1.7%	944
Graham	37,710	0.6%	109	0.4%	289
Greenlee	8,380	0.1%	35	0.1%	418
La Paz	20,730	0.3%	203	0.7%	979
Maricopa	3,843,370	59.7%	13,846	47.2%	360
Mohave	200,417	3.1%	1,124	3.8%	561
Navajo	107,226	1.7%	910	3.1%	849
Pima	986,081	15.3%	4,164	14.2%	422
Pinal	384,231	6.0%	1,387	4.7%	361
Santa Cruz	48,088	0.7%	159	0.5%	331
Yavapai	211,247	3.3%	1,029	3.5%	487
Yuma	200,431	3.1%	2,350	8.0%	1,172
Other	.	.	627	2.1%	.
Total	6,438,178	100.0%	29,348	98.2%	456

Missing = 529

Statewide, there were 29,877 traumatic injuries seen at state designated trauma centers– a rate of 456 per 100,000 Arizona residents.

Graham County makes up 0.6 percent of the total population of Arizona. Injuries occurring in the county make up about 0.4 percent of the trauma cases from state designated trauma centers. The county-specific trauma rate, 289 per 100,000 county residents, is lower than the state average (Figure 3).

FIGURE 3: County-specific trauma rates per 100,000 residents

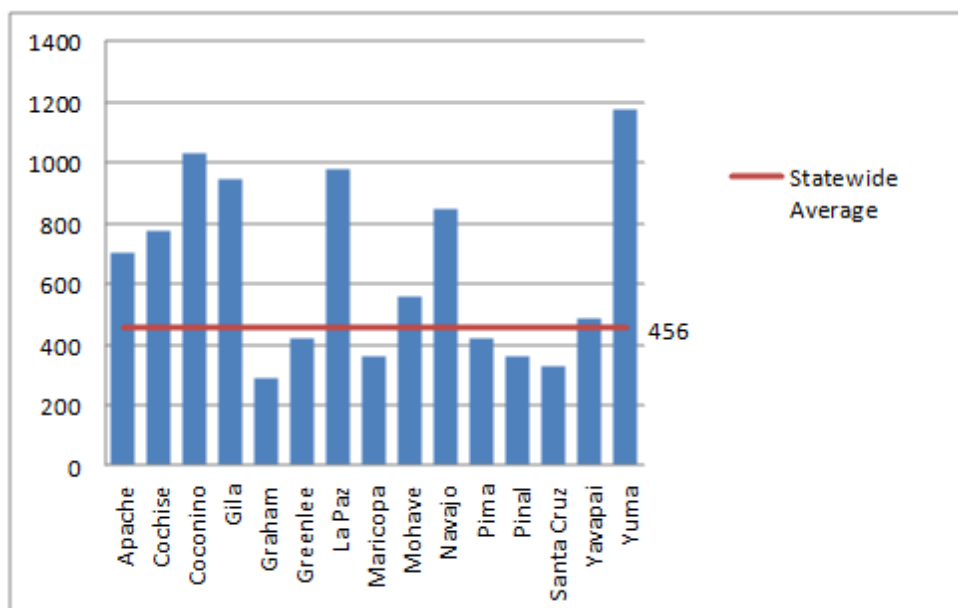


FIGURE 4: Frequency and rate of trauma by age, race/ethnicity, and gender in Graham County

Group		Count	Percent	Rate per 100,000
Age	<= 14	16	14.7%	177
	>14	93	85.3%	324
Gender	Female	33	30.3%	189
	Male	76	69.7%	375
Race/Ethnicity	White	50	45.9%	250
	American Indian or Alaska Native	32	29.4%	554
	Other	27	24.8%	226
Total		109	100%	289

Due to the low trauma frequencies in some age groups, categories have been combined for analysis.

The trauma rate is lower in Graham County for all age groups (Figure 4), as compared to the rest of the state. Pediatrics < = 14 years of age have a lower trauma rate than people > 14 years of age (Figure 5).

FIGURE 5: Trauma rate per 100,000 residents by age

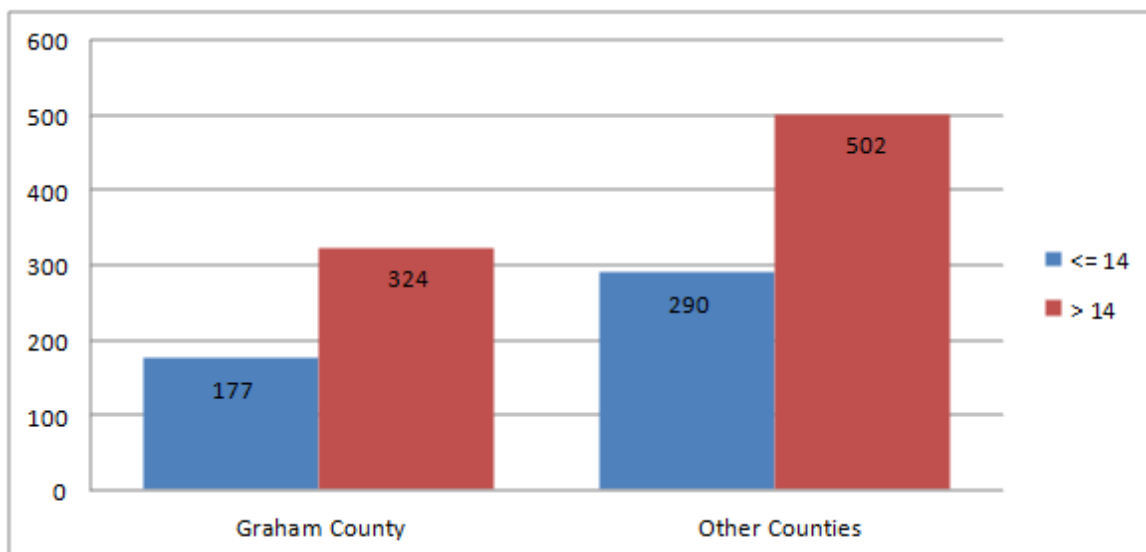
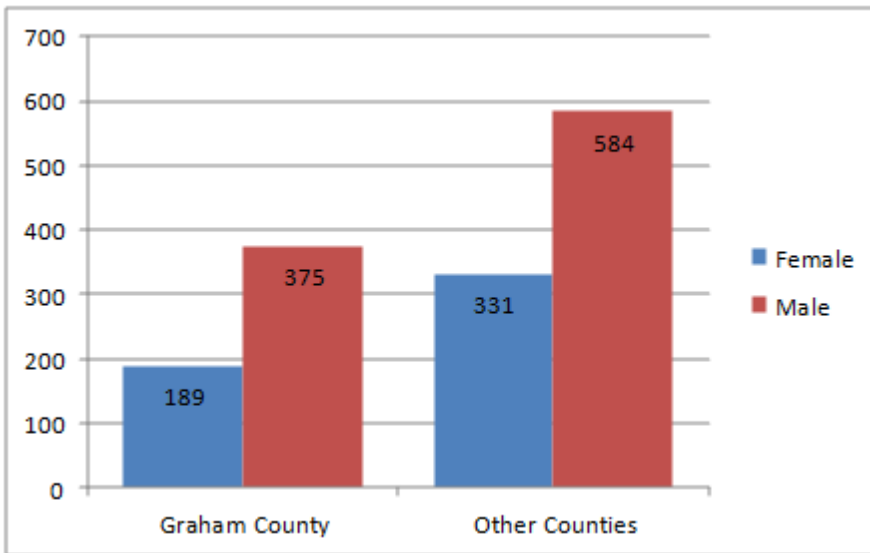


FIGURE 6: Trauma rate per 100,000 residents by gender



Both males and females in Graham County have lower trauma rates than their counterparts in other counties (Figure 6).

Due to the low trauma frequencies in some race/ethnicities, those categories have been combined for analysis.

The trauma rate for all race/ethnicities is lower in Graham County than in other counties (Figure 7).

FIGURE 7: Trauma rate per 100,000 residents by race/ethnicity

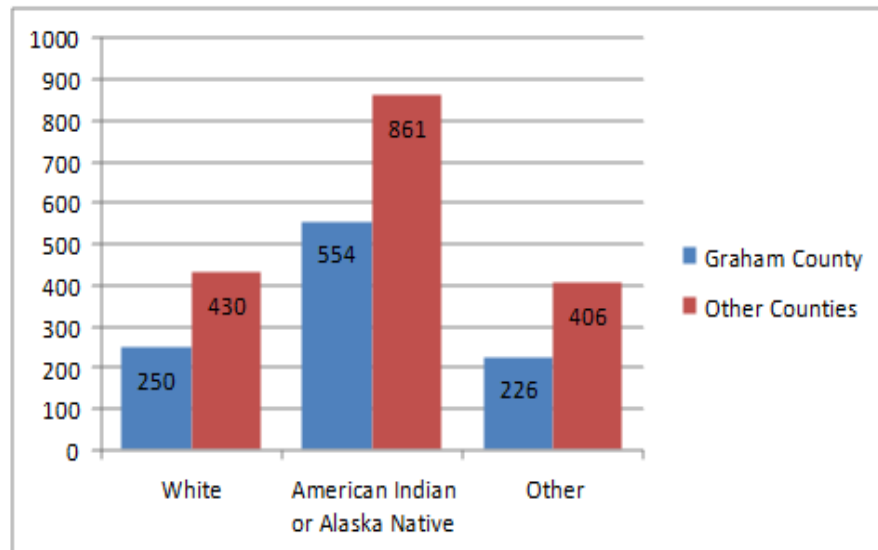


Figure 9 shows the top causes of traumatic injury in Graham County, as compared with other counties (rates per 100,000).

FIGURE 8: Frequency of top causes of trauma in Graham County

Cause	Frequency	Percent
Motor Vehicle Traffic	27	24.8%
Falls	24	22.0%
Struck by/Against	24	22.0%
Other Specified	7	6.4%
Transport, other	7	6.4%
Other Trauma	20	18.4%
Total	109	100%

FIGURE 9: Top causes of trauma, rates per 100,000 residents

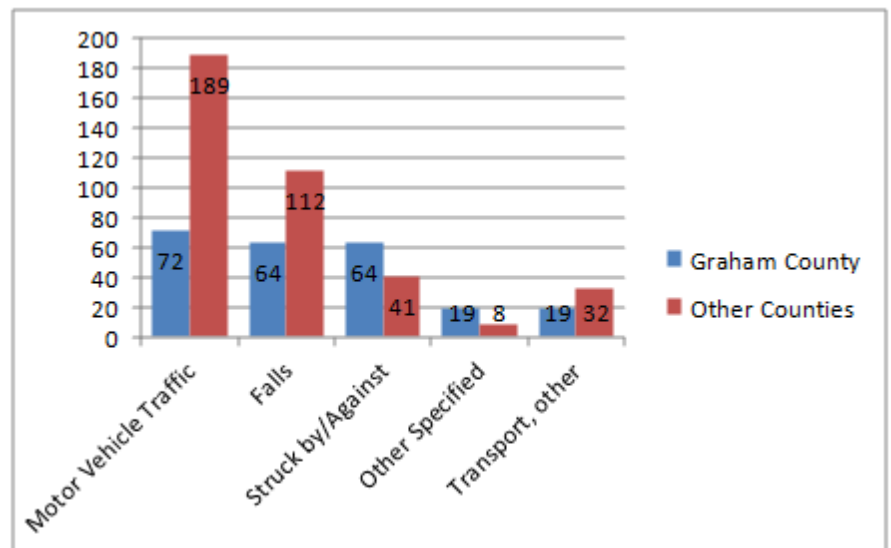
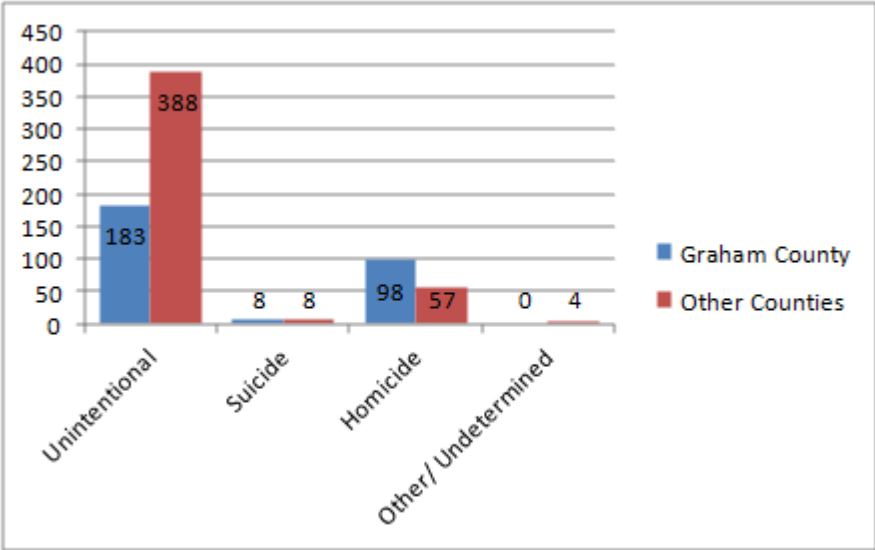


FIGURE 10: Intention of trauma, rate per 100,000 residents



The rate of homicide/assault trauma intent in Graham County is higher than in other Arizona counties (Figure 10).

Documented alcohol and drug use was present in 29.4% and 15.6% of traumatic injuries in Graham County, respectively (Figure 11).

FIGURE 11: Substance use in traumatic injuries in Graham County

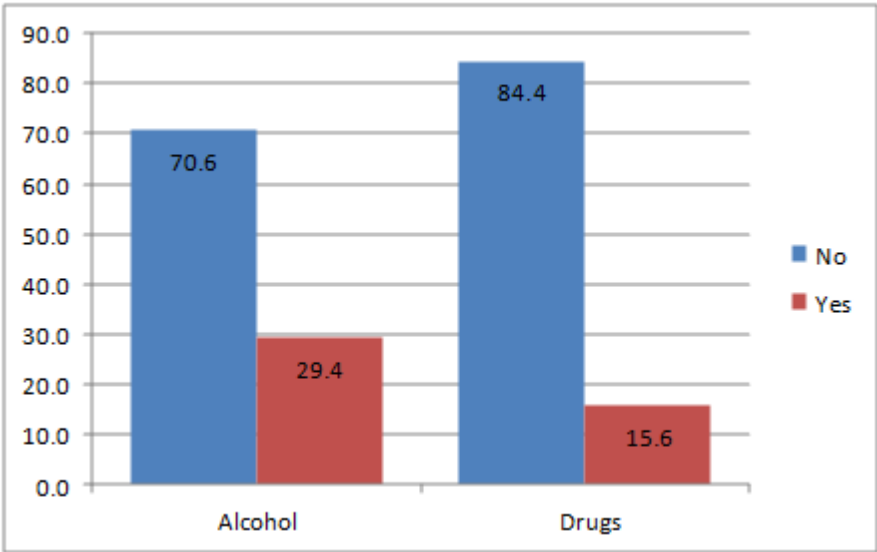


FIGURE 12: Frequency of substance use in traumatic injuries in Graham County

Substance Use		Frequency	Percent
Alcohol	No	77	70.6%
	Yes	32	29.4%
	Total	109	100%
Drugs	No	92	84.4%
	Yes	17	15.6%
	Total	109	100%

FIGURE 13: Proportion of ground and air ambulance transports in Graham County

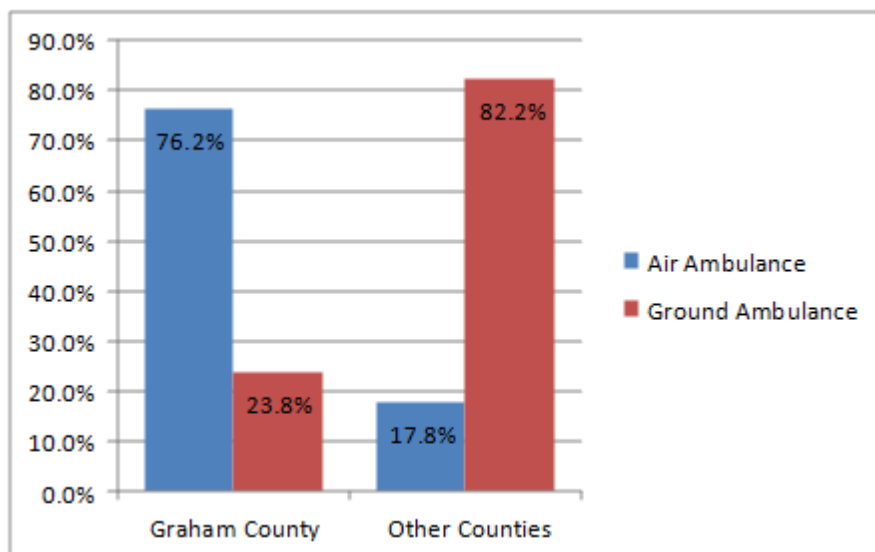


FIGURE 14: Count of ground and air ambulance transports

	Air	Ground	Other	Missing
Graham County	80	25	4	0
Other Counties	4,493	20,818	3,813	115

FIGURE 15: Golden hour by transport type

The term “golden hour” refers to the hour immediately following traumatic injury. Theoretically, the chance of survival is highest when medical treatment to prevent irreversible internal damage is obtained within this time period.

Due to the large amount of missing data on golden hour, results on the proportion of patients arriving at the hospital within one hour are not conclusive.

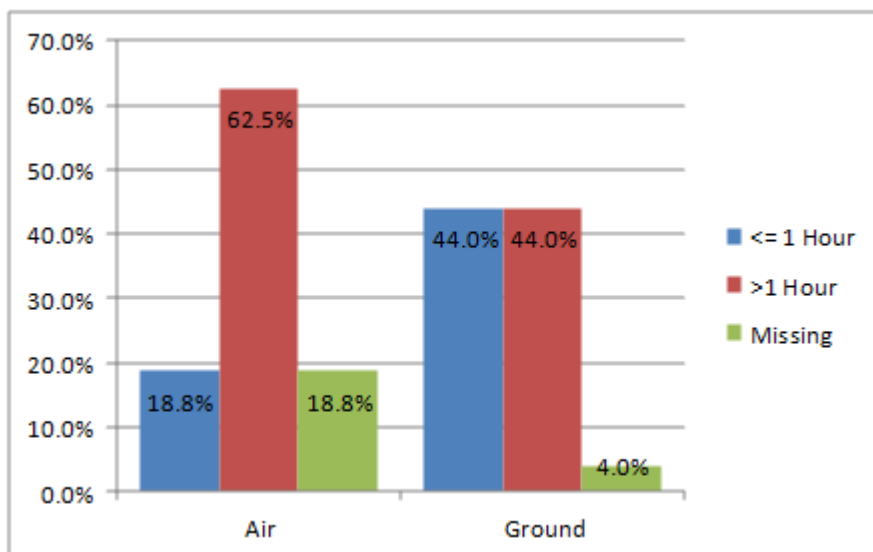


FIGURE 16: Count of golden hour by transport type to trauma center

Golden Hour	Air Ambulance		Ground Ambulance		Total	
	Count	Percent	Count	Percent	Count	Percent
≤ 1 Hour	15	18.8%	11	47.8%	26	25.2%
> 1 Hour	50	62.5%	11	47.8%	61	59.2%
Missing	15	18.8%	1	4.3%	16	15.5%
Total	80	100%	23	100%	103	100%

FIGURE 17: Primary payer in Graham County

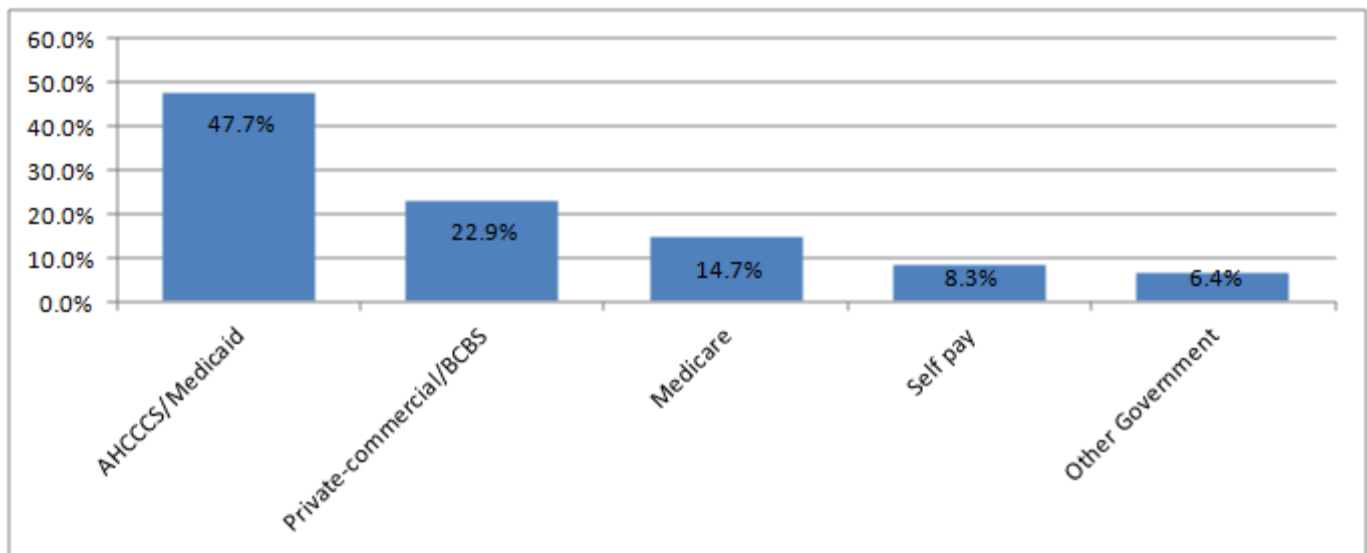


FIGURE 18: Count of primary payer in Graham County

Primary Payer	Frequency	Percent
AHCCCS/Medicaid	52	47.7%
Private-commercial/BCBS	25	22.9%
Medicare	16	14.7%
Self pay	9	8.3%
Other Government	7	6.4%

AHCCCS/Medicaid is the primary payment source for trauma-related hospital visits in Graham County (Figures 17 & 18).

The median charge in Graham County in 2011 was \$22,634 (Figure 19).

FIGURE 19: Charges & reimbursement by primary payer in Graham County

Primary Payer	Total Charges	Median Charges	Total Reimbursements
Self pay	\$207,241	\$14,551	\$93
AHCCCS/Medicaid	\$1,321,978	\$19,357	\$79,535
Private-commercial/BCBS	\$1,350,427	\$26,828	\$247,051
Other Government	\$262,802	\$24,402	\$9,775
Medicare	\$872,751	\$35,467	\$90,342
Total	\$4,015,198	\$22,634	\$426,796